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# Engendering Constructivist Learning in Tertiary Teaching

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In constructivist teaching, it is expected that students are able to apply skills and knowledge acquired from their course of study to the various situations that they encounter over the course of their professional lives. Constructivist classrooms engage learners actively in the learning process. Learners actively take knowledge, connect it to previously assimilated knowledge and make it theirs by constructing their own interpretation (Cheek, 1992). Formulating one's teaching philosophy requires the reflecting on personal beliefs and pedagogies about teaching and learning, and reviewing and evaluating teaching approaches, and visions for teaching. It necessitates aligning personal values with students' learning needs and setting out clear objectives for teaching. In the constructivist model, students are urged to be actively involved in their own process of learning, on the assumption that individuals construct knowledge instead of receiving it from others. The way in which knowledge is conceived and acquired, the types of knowledge, skills, and activities emphasized, the role of the learner and the teacher, how goals are established: All of these factors are expressed differently from the constructivist perspective (Christie & Stone, 1999). This paper proposes a framework for applying constructivist practices in a social peer learning environment while analyzing its strengths and limitations.

*Keywords:* active learning, engaging learners, pedagogical beliefs, transformational knowledge, constructivism

## Introduction

Constructivist teachers attempt to engage learners actively in the learning processes and conceptualise the learning as the result of constructing meaning based on an individual's experience and prior knowledge. Constructivism as a theory of learning, or psychological constructivism, emerged from the work of cognitive psychologists, such as Piaget, Vygotsky, and Bruner, and on the assumption that with the growth of two perspectives of cultural psychology the two perspectives of individual constructivism and social constructivism gained dominance (Lowenthal & Muth, 2008). While these two schools of thought may differ, in the sense that the former centres on the construction of meaning inside a person, while the latter focuses on the construction of meaning among people, many people argue that all learners construct meaning socially as well as individually (Lowenthal & Muth, 2008). Constructivist instructors value learner's prior knowledge in terms of cognitive processes, and self-reflective skills and students' prior understanding of concepts, and or "unanticipated" responses often deemed as misunderstandings by others are considered important (Vrasidas, 2000).

Tertiary teachers and educators by and large maintain preferred teaching styles unlike learning styles adopted by students. Quite often these teaching styles are perfected and practiced through deep reflection and

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personal learning experiences, and witness transformational changes based on individual realizations. However, most teaching styles are also rooted in pedagogical beliefs and values innate to the instructor, and are aligned to their philosophical assumptions of teaching and learning. Teaching pedagogies have emerged from the numerous learning theories and concepts. The dominant educational model that took precedence initially was primarily instructional and transmissional. Knowledge was traditionally seen to be transmitted from instructors to learners. This was supported by dominant learning theories, such as behaviourism. Behaviorism promulgated by Skinner and others, preceded the cognitivist world view which was put forward by Gagne, Briggs, Bruner, and others. In the behaviourist model, learners are perceived as passive and responding to stimulus. In the cognitive model, however, information is processed leading to other outcomes, and learning is defined as a change in the learner's schemata. In contrast, constructivism upholds learning contexts in which learners are actively engaged and negotiate their own learning. In constructivism, it is believed that instruction can be made more proficient by providing a careful sequencing of materials to allow learners to build upon what they have already known and go beyond the information they have been given to discover the key principles by themselves (Bruner, 1967). When students continuously reflect on their experiences, they may find their ideas gaining in complexity leading to the development of abilities to integrate new information. Bruner (1990) conceded that learners progress through numerous stages of the development, although the ages at which these transitions would occur were not made clear by Bruner.

Vygotsky's (1978) social development theory is one of the foundations of constructivism. Vygotsky proposed the notion of ZPD (zone of proximal development) which he defined as the distance between a student's ability to perform a task under adults' guidance and/or with peer collaboration and the student's ability in solving the problem independently (Vygotsky, 1978). Vygotsky asserted that the internalization of higher mental functions involved the transfer from the interpsychological to the intrapsychological, that is, from socially supported to individually controlled performance (Au, 1998). Researchers agree that Vygotskian socio-cultural psychology and the notion of the ZPD are at the heart of the concept of scaffolding (Berk, 2002; Daniels, 2001; Wells, 1999; Krause, Bochner, & Duchesne, 2003; McDevitt & Ormrod, 2002).

Social constructivists' research on literacy learning focuses on the role of teachers, peers, and family members in mediating learning, on the dynamics of classroom instruction, and on the organization of systems within which children learn or fail to learn (Moll, 1990).

Constructivists maintain that learners actively construct knowledge within the challenging arenas of their learning environments. The concept of constructivism emphasizes the student as being the "active learner", and playing a central role in mediating and controlling learning (Jonassen, 1999). Learners should be presented with interesting, relevant, and meaningful problems for solving (Jonassen, 1999). These problems in real world should not be markedly defined, but rather complexly structured, so that students can seek out suitable solutions to the problem. Constructivist learning environments must be designed to engage the learner in multifaceted thinking exercises that require reasoning and investigation of the problem to be undertaken. Students must construct their own ideas to make sense of the situation. In their constructivist manifesto, Jonassen, Mayes, and McAleese (1993) stated that constructivist environments are unparalleled for adult learning and university level situations.

This paper analyzes theoretical perceptions of constructivism and the constructivist model. It examines the various methods through which constructivist learning occurs and its benefits in engaging and developing

student learning. In addition, it considers some of the criticisms leveled against constructivism. It concludes with the belief that constructivism is a more pertinent teaching approach in tertiary teaching that assists in developing analytical and critical thinking skills in students.

## Theoretical Views on Constructivism

Literature review significant to the constructs of learning, reveals that in constructivism, instructors focus on creating links between facts and the development of new understanding in learners (Murphy, 1997). Instructors adapt their teaching strategies based on student responses and encourage students to analyze, interpret, and predict information. Constructivism takes a more cognitive approach as opposed to behaviorism, which emphasizes observable, external behaviour and, therefore, avoids reference to meaning, representation and thought (Ryder, 2004). This understated difference has profound implications for all aspects of a theory of learning. The way in which knowledge is conceived and acquired, the types of knowledge, skills and activities emphasized, the role of the learner and the teacher, how goals are established: All of these factors are expressed differently in the constructivist perspective (Christie & Stone, 1999). An understanding of the role of the teacher in the constructivist classroom provides a valuable tool, which unveils how the theory influences practice (Giridharan & Albon, 2005). The emphasis in constructivism is on how learners develop skills in logic, solve problems, and follow directions, all of which require higher-order thinking skills. It "requires the willing abandonment of familiar perspectives and practices and the adoption of new ones" (J. Brooks & M. Brooks, 1993, p. 25).

Gagnon and Collay's (2001) constructivist model analyzes six elements in constructivist classrooms. Although several approaches to achieve constructivist learning exist from children to adults, Gagnon and Collay (2001) proposed six components to help envisage and apply constructivist learning design: situation, groupings, bridge, questions, exhibit, and reflections. For instance, the participants first discuss the goals, purpose, and agenda of the learning situation. Then, they form groups in which to engage the material. A further linking activity facilitates students to identify and connect their prior knowledge with the new material. Then questions emerge from both students and instructor that help guide the activity. Models or exhibits provide the outputs that students use to demonstrate their learning. Then students and instructor reflect upon the activity in terms of both the content and the process of learning. Empirical studies demonstrate that the process of actively questioning, interpreting, problem-solving, and creating produces more critical, deeper, and lasting learning than traditional teacher-dominated classrooms (Marlowe & Page, 1998).

Fosnot (1996) stated that constructivism has become a buzzword in both school education and teaching training in western parts of the world, and he defined learning as "an interpretive, recursive, building process by active learners interacting with the physical and social world" ( p. 30). It is undeniable that learning occurs in a social setting. Social constructivism is rooted in Vygotsky's (1986) social development theory which rejected the assumption made by fellow cognitivists, such as Piaget and Perry that it was possible to separate learning from its social context. Vygotsky was concerned not only with the role of inner speech on the learning of concepts, but also on the role of the adult and the learners' peers as they conversed, questioned, explained, and negotiated meaning (Fosnot, 1996, p. 20).

A significant concept for social constructivists is that "scaffolding" is a process of directing the learner from what he or she knows to future knowledge to be acquired (Schunk, 2004). Scaffolding allows students to

perform tasks that would normally be slightly more difficult without the facilitation from the instructor. Appropriate support from the instructor would permit students to maximize their individual development. Scaffolding is therefore an important characteristic of constructivist learning and teaching. Vygotsky (1986) noted that children interacting towards a common goal tend to regulate each other's actions.

## CLE (Constructivist Learning Environment)

In this theory proposed by Jonasssen (1999), a comprehensive set of methods are considered for encouraging constructivist learning environments. The theory focuses on problem solving and conceptual development in indistinct and poorly structured domains. The CLE (Constructivist Learning Environment) theory believes that the problem drives the learning, rather than acting as an example of the concepts and principles previously taught. The essence to meaningful learning is the ownership of the problem or learning goal. The CLE theory suggests a set of instructional methods including selecting and providing appropriate problems, related cases or worked examples, learner-selectable information, cognitive tools, collaborative tools, and social/contextual support. Learning occurs most effectively in context, which becomes an important part of the knowledge base (Jonassen, 1991). Instructional activities could involve modeling, coaching, and scaffolding in the CLE. In summary, in the constructive learning environment, learning is collaborative, contextualized, and reflective (see Figure 1).

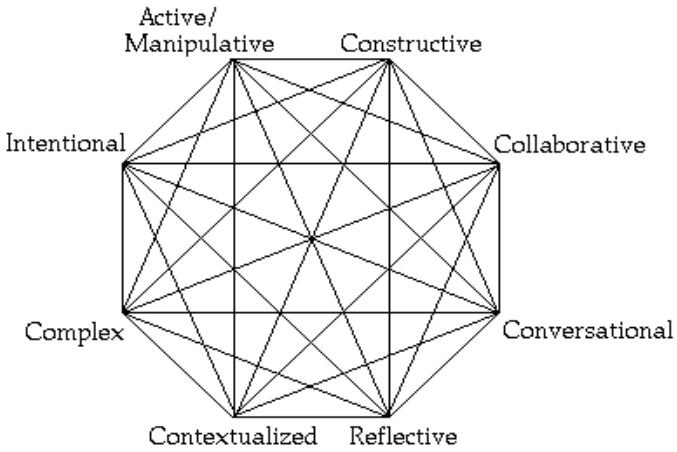


*Figure 1*. Qualities to be considered for constructivist learning environments (Jonnassen, 1999).

## In Defense of Constructivism

Some of the criticisms raised against constructivism are that it is very subjective and that learners need maturity to be adept in the constructivist classroom. It has also been labeled elitist. Critics contended that constructivism and other progressive educational theories have been more successful with children from privileged backgrounds who have the advantage of having exceptional teachers, dedicated parents, and wealthy home environments (Constructivism as a paradigm for teaching and learning, n.d.). They argued that disadvantaged children, lacking such resources, benefit more from more explicit instruction. Critics also stated that collaborative characteristics of constructivist classrooms lead to the dominance of the majority silencing the minorities and less vocal learners. However, these assertions have been repudiated by constructivists who state that contrary to such claims, learners from constructivist classrooms in actual fact developed better and

higher order thinking skills through negotiating and communicating with peers.

Constructivists are also censured for holding the view that knowledge is "merely constructed", or that personal identity is a "mere social construction" (Burbules, 2000, p. 1). The "epistemological" debate between constructivism and its critics appears to be mainly about whether there can be a justification for knowledge that rests upon criteria that are not socially and culturally specific. On the other hand, the "metaphysical" debate between constructivism and its critics seems to be largely about whether there is a reality that is external to attempts to grasp it (Burbules, 2000).

A comparative analysis of the traditional and constructivist classroom points to the evidence of stark differences. What stands out most in a constructivist approach is that knowledge is transferable. The learners create the systematic standards that they can take into other learning environments. The knowledge attained is built through systems and processes that clearly demonstrate a need for higher-order thinking skills. Table 1 shows the distinct differences of constructivist and traditional classrooms.

Table 1

*Distinct Differences of Constructivist and Traditional Classrooms*

| Traditional | Constructivist |
|---|---|
| Curriculum begins with the parts of the whole. Emphasises basic skills. | Curriculum emphasizes big concepts, beginning with the whole and expanding to include the parts. |
| Strict adherence to fixed curriculum is highly valued. | Pursuit of student questions and interests is valued. |
| Materials are primarily textbooks and workbooks. | Materials include primary sources of material and manipulative materials. |
| Learning is based on repetition. | Learning is interactive, building on what the student already knows. |
| Teachers disseminate information to students; students are recipients of knowledge. | Teachers have a dialogue with students, helping students construct their own knowledge. |
| Teacher's role is directive, rooted in authority. | Teacher's role is interactive, rooted in negotiation. |
| Assessment is through testing, correct answers. | Assessment includes student works, observations, and points of view, as well as tests. Process is as important as product. |
| Knowledge is seen as inert. | Knowledge is seen as dynamic, ever changing with our experiences. |
| Students work primarily alone. | Students work primarily in groups. |

*Source*: Constructivism as a paradigm for teaching and learning, n.d..

There is a feeling of ownership in learners of constructivist classrooms as knowledge gained is based on students' questions and discovery, and they are engaged in the processes of assessments as well, either in a designing or a self-evaluative capacity. Constructivist assessments include case studies, reports, personal reflections, physical models, and artistic representations. Initiating students' throughout the learning processes enable better retention and transferability of knowledge gained and connection to real life and authentic learning examples.

Barab and Duffy (2000) expounded that constructivism is a theoretical perspective on learning and draws on an analogy of a lens to explain how it functions, in that it is an interpretive lens and as such it applies to all learning environments and developmental levels. Barab and Duffy (2000) further elucidated that learners are always constructing understandings of their world in order to move forward and understand the management of that construction instructors must understand the learners' goals.

## Conclusions

Learning is closely associated with other human beings: teachers, peers, family, as well as casual acquaintances. The principles of constructivist pedagogy: encouraging collaboration, promoting activity and

exploration, respecting multiple points of view, and emphasizing authentic problem-solving have a number of benefits, and underscore that these approaches aid a more creative and pragmatic attitude toward learning. In addition, constructivism advances social and communication skills by fostering learning environments that emphasizes collaboration and exchange of ideas. Learners need to vocalize and articulate their ideas clearly and collaborate on tasks effectively by sharing views in group projects. Consequently, learners are required to exchange ideas and must learn to negotiate with others and value contributions of peers in a social setting. It is essential for success as in the real world, learners will be exposed to a variety of experiences in which they will have to cooperate, collaborate, and understand ideas proposed by others.

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